

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
19 February 2004 (19.02.2004)

PCT

(10) International Publication Number
WO 2004/014948 A3

(51) International Patent Classification⁷: **C07K 14/47**

(21) International Application Number:
PCT/EP2003/008711

(22) International Filing Date: 6 August 2003 (06.08.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
02017524.6 6 August 2002 (06.08.2002) EP

(71) Applicant and

(72) Inventor: **BECKER-KOJIC, Zorica** [DE/DE]; Bothestrasse 33, 69126 Heidelberg (DE).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **TERNESS, Peter** [DE/DE]; Hecker-Strasse 24, 69124 Heidelberg (DE).

(74) Agent: **SCHÜSSLER, Andrea**; Truderinger Strasse 246, 81825 Munich (DE).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
15 April 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: GPI ANCHORED GLYCOPROTEIN ACA AS A NOVEL TUMOR MARKER

(57) Abstract: Described is a GPI-anchored surface glycoprotein having a GPI-anchor which is characterized by a non-acetylated inositol ring and diacyl glycerol as lipid tail of the anchor. A particular glycoprotein of the invention, ACA, is strongly expressed in melanoma cells and some leukemia cells, thus, is an useful marker for diagnosis of said tumors. The invention also relates to salts, functional derivatives and active fractions of ACA having substantially the same spectrum of biological activities of ACA. The invention also relates to a process for the purification of ACA, to its cloning and its production by recombinant DNA techniques. It further relates to diagnostic compositions comprising an anti-ACA-antibody or an oligonucleotide probe capable of hybridizing to ACA-mRNA and to pharmaceutical compounds containing a compound capable of reducing the expression of ACA or the activity of the protein.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 03/08711

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 C07K14/47

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

BIOSIS, MEDLINE, EPO-Internal, CHEM ABS Data, SEQUENCE SEARCH

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	KOJIC ZORICA A BECKER ET AL: "A novel human erythrocyte glycosylphosphatidylinositol (GPI)-anchored glycoprotein ACA. Isolation, purification, primary structure determination, and molecular parameters of its lipid structure." JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 277, no. 43, 25 October 2002 (2002-10-25), pages 40472-40478, XP002246776 ISSN: 0021-9258 the whole document --- -/-	1-24

☒ Further documents are listed in the continuation of box C.

☐ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

21 January 2004

Date of mailing of the international search report

18/02/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Trommsdorff, M

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 03/08711

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	MAYOR S ET AL: "GLYCOLIPID PRECURSORS FOR THE MEMBRANE ANCHOR OF TRYPANOSOMA-BRUCEI VARIANT SURFACE GLYCOPROTEINS II. LIPID STRUCTURES OF PHOSPHATIDYLINOSITOL-SPECIFIC PHOSPHOLIPASE C SENSITIVE AND RESISTANT GLYCOLIPIDS" JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 265, no. 11, 1990, pages 6174-6181, XP002246777 ISSN: 0021-9258 abstract; figure 1	1,16-18
Y	RUDD PAULINE M ET AL: "The glycosylation of the complement regulatory protein, human erythrocyte CD59." JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 272, no. 11, 1997, pages 7229-7244, XP002246778 ISSN: 0021-9258 figures 1,4	1,16-18
A	MCCONVILLE M J ET AL: "THE STRUCTURE, BIOSYNTHESIS AND FUNCTION OF GLYCOSYLATED PHOSPHATIDYLINOSITOLS IN THE PARASITIC PROTOZOA AND HIGHER EUKARYOTES" BIOCHEMICAL JOURNAL, PORTLAND PRESS, LONDON, GB, vol. 294, no. PART 2, 1993, pages 305-324, XP001007050 ISSN: 0264-6021 the whole document	
A	CHEN RUI ET AL: "Mammalian glycoposphatidylinositol anchor transfer to proteins and posttransfer deacylation." PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES, vol. 95, no. 16, 4 August 1998 (1998-08-04), pages 9512-9517, XP002246779 Aug. 4, 1998 ISSN: 0027-8424 the whole document	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP 03/08711

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
see FURTHER INFORMATION sheet PCT/ISA/210
2. ☒ Claims Nos.: 21-23
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.1

Although claim 7 is directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

Although claims 19 and 20 are directed to a diagnostic method practised on the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

Continuation of Box I.2

Claims Nos.: 21-23

Present claims 21-23 relate to a compound defined by reference to a desirable characteristic or property, namely its ability to reduce or eliminate the expression or the activity of ACA. The claims cover all compounds having this characteristic or property, whereas the application does not provide support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for any such compound. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the product/compound/method/apparatus by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, no search has been carried out for claims 21-23.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.